STATEMENT OF BASIS

Applicant:	Town of Pukwana
Permit Number:	SD0022586
Contact Persons:	Jim Mathews, Chairman Cody Sharping, Utility Manager PO Box 87 Pukwana, SD 57370
Phone:	(605) 894-4316 (Town) (605) 894-4570 (Facility-automated) (605) 680-4524 (Cody Sharping's cellular phone)
Permit Type:	Minor Municipal - Renewal

DESCRIPTION

The town of Pukwana owns and operates a wastewater treatment facility located about 1/8 mile northwest of the town in the northwest ¼ of Section 26, Township 104 North, Range 70 West, in Brule County, South Dakota (Latitude 43.783979, Longitude -99.184868; Navigational Quality GPS).

The wastewater treatment facility consists of a two-cell pond system, with an average design flow of 0.735 million gallons per day (MGD) (permit application). Wastewater flows by gravity to a main lift station located at the treatment facility. The primary cell has a surface area of 2.1 acres and the secondary cell has a surface area of 2.9 acres.

This wastewater treatment facility serves a population of 287 persons (2000 census), with no known industrial users contributing flow to the system.

RECEIVING WATERS

Any discharge from this facility will enter an unnamed wetland, which is classified by the South Dakota Surface Water Quality Standards (SDSWQS), Administrative Rules of South Dakota (ARSD), Section 74:51:03:01 for the following beneficial use:

(9) Fish and wildlife propagation, recreation, and stock watering waters.

Since the receiving waterbody has a minimum beneficial use classification of (9), the SDSWQS (ARSD Section 74:51:01:02.01) require that an analysis of the receiving water be conducted to determine whether the waterbody deserves a higher beneficial use designation. The South Dakota Department of Environment and Natural Resources (SDDENR) has conducted an analysis for the unnamed wetland near the discharge location. SDDENR personnel have determined that the beneficial use classifications for the unnamed wetland are appropriate and will remain unchanged.

ANTIDEGRADATION

SDDENR has fulfilled the antidegradation review requirements for this permit. In accordance with South Dakota's Antidegradation Implementation Procedure and the SDSWQS, no further review is required. The results of SDDENR's review are included in Attachment 1.

MONITORING DATA

The town of Pukwana has been submitting Discharge Monitoring Reports (DMRs). As shown in Attachment 2, this facility has had one violation of maximum pH since the start of the current permit. However, this violation seems to be an isolated incident and does not reflect the overall treatment performance of this facility. No future violations are expected. No discharge was reported for the months not included in the table.

INSPECTIONS

Personnel from SDDENR conducted a *Compliance Inspection* of the town of Pukwana's wastewater treatment facility on March 19, 2007. The following requirements, recommendations, and comments and corrective actions were made:

Requirements

1. The wastewater operator did not have a copy of the current permit and therefore was not familiar with the permit requirements. A copy of the permit and statement of basis are being included with this report. The operator should become familiar with the requirements of the permit in order to ensure that all conditions are being met.

2. No wastewater treatment system records were available except for the Discharge Monitoring reports. Because of recent town personnel turn-over, the location or existence of the wastewater records could not be established. All records associated with the treatment system are required to be kept for a minimum of three years.

3. The operator says that monthly inspections of the wastewater treatment facility are being conducted. However, an inspection notebook is not being maintained for the wastewater ponds. At a minimum, the notebook shall include the following:

    1. Date and time of the inspection;

    2. Name of the inspector(s);

    3. The facility's discharge status;

    4. The measured water depth in all cells;

    5. Identification of operational problems and/or maintenance problems;

6. Recommendations, as appropriate, to remedy identified problems;

7. A brief description of any actions taken with regard to problems identified; and

8. Other information, as appropriate.

The inspection notebook is a condition of the SWD permit. *A copy of an inspection notebook was presented to the operator during the inspection.*

4. The November 2004 Discharge Monitoring Report (DMR) was reviewed as part of the inspection. The previous operator miscalculated the Maximum 7-day average for Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD). More care should be taken when filling out DMRs.

5. DMRs have been submitted late. As a reminder, DMRs are due on the 28th day of the month following the completed quarter:

   • January, February, and March DMRs are due April 28th

   • April, May, and June DMRs are due July 28th

   • July, August, and September DMRs are due October 28th

   • October, November, and December DMRs are due January 28th .

6. The town had to replace/refurbish the lift station pumps last winter. There is a pipe in the main lift wetwell which may be a bypass pipe. Please try to locate any records or blueprints with this pipe on it to determine its purpose. If it is a bypass pipe, it will need to be capped or eliminated.

7. The town's pH meter does not meet the minimum required specifications. If a discharge becomes necessary, the town must have an appropriate meter or have access to one. The town has been borrowing the city of Chamberlain's pH meter. If the town continues to borrow the city of Chamberlain's meter, please make sure it is properly calibrated before use and the town keeps proper calibration records.

Recommendations and Comments

1. In order to have an adequate source of funds for repairs and replacement of the town's wastewater collection and treatment system, we recommend that the town review its wastewater rates and give serious consideration to raising them. Several communities are facing upgrades, rehabilitation, or new construction. These construction costs are typically very large and cannot be accomplished without the community leaders having the foresight to set appropriate wastewater rates to cover these costs as well as the cost of operation and maintenance. Many communities facing construction projects are finding that an appropriate rate is approximately $17 per household per month. The town may

want to consider annual increases to the sewer use rates over a period of several years to reach a more appropriate level.

2. The water level was high in Cell 1 and low in Cell 2. The minimum recommended operating depth is 2 feet and the maximum is 5 feet. The operator began to transfer water from cell 1 to cell 2 during the inspection. The water flow was causing some scour in cell 2. The operator is going to place riprap in cell 2 below the inlet pipe and equalize the water levels. Please maintain appropriate water levels in the cells as much as possible.

3. The dikes were mowed and well maintained but there is a lot of weed growth in the riprap. Weed growth on the inner dikes of your ponds can promote erosion of the dikes. Weed growth also inhibits wind action on the ponds that is necessary to introduce air into the water. Eliminate the weeds from the inner dikes by cutting, pulling, or spraying. A licensed individual using a non-residual type of herbicide must perform the spraying.

EFFLUENT LIMITS

The permittee shall comply with the effluent limits specified below. These limits are based on the Secondary Treatment Standards (ARSD Section 74:52:06:03), Best Professional Judgment (PBJ), and current permit limits.

Outfall 001 – Any discharge from the valve-controlled discharge structure in the second stabilization pond to an unnamed wetland (Latitude 43.783732, Longitude -99.186248, Navigational Quality GPS).

1. The five-day Biochemical Oxygen Demand (BOD_5) concentration shall not exceed 30 mg/L (30-day average) or 45 mg/L (7-day average). These limits are based on the Secondary Treatment Standards.

2. The Total Suspended Solids (TSS) concentration shall not exceed 110 mg/L (30-day average) or 165 mg/L (7-day average). These limits are based on the SDDENR policy for discharges from stabilization ponds to waters classified for fish and wildlife propagation, recreation and stock watering waters and the current permit..

   Note: ARSD Section 74:52:06:04(2) allows TSS limits less stringent than Secondary Treatment Standards if it can be demonstrated that:

   a) Waste stabilization ponds are the principal process used for secondary treatment;
   b) Operation and maintenance data indicate that TSS values specified in subdivision 74:52:06:03(3) cannot be achieved;
   c) The effluent quality for TSS does not exceed 110 mg/L for 30-day average and 165 mg/L for 7-day average; and
   d) The POTW is achieving levels of effluent quality required for BOD_5 specified in Section 74:52:06:03.

Because the facility meets the above criteria, the TSS variance is allowed.

3. The pH shall not be less than 6.0 standard units or greater than 9.0 standard units in any single analysis and/or measurement. These limits are based on the Secondary Treatment Standards.

   Note: SDDENR specifies that pH analyses are to be conducted within 15 minutes of sample collection with a pH meter. Therefore, the permittee must have the ability to conduct onsite pH analyses. The pH meter used must be capable of simultaneous calibration to two points on the pH scale that bracket the expected pH and are approximately three standard units apart. The pH meter must read to 0.01 standard units and be equipped with temperature compensation adjustment.

4. No chemicals, such as chlorine, shall be used without prior written permission. This limit is based on BPJ.

Effluent water temperature (°C), flow rate (MGD), total flow (million gallons), and duration of discharge (days) shall be monitored, but will not have a limit.

SELF MONITORING REQUIREMENTS

A minimum of three samples shall be taken during any discharge. A sample shall be taken at the beginning, middle, and end of the discharge if the discharge is less than one week in duration. If a single, continuous discharge is greater than one week in duration, three samples shall be taken the first week and one each following week. All samples collected during the 7-day or 30-day period shall be used in determining the averages. The permittee always has the option of collecting additional samples if appropriate.

Effluent monitoring results shall be summarized for each month and recorded on separate DMRs to be submitted to SDDENR on a **quarterly** basis. If no discharge occurs during a month, it shall be reported as such on the DMR.

Monitoring shall consist of **monthly** inspections of the facility and the outfall to verify that proper operation and maintenance procedures are being practiced and whether or not there is a discharge occurring from this facility. **Daily** inspections are required during a discharge. The lift station shall be inspected on at least a **weekly** basis, although **daily** inspections are recommended. Documentation of each of these visits shall be kept in a notebook to be reviewed by SDDENR or EPA personnel when an inspection occurs.

SLUDGE

Based on the town of Pukwana's permit application, SDDENR does not anticipate sludge will be removed or disposed of during the life of the permit. Therefore, the proposed Surface Water Discharge permit shall not contain sludge disposal requirements. However, if sludge disposal is necessary, the town of Pukwana is required to submit to SDDENR a sludge disposal plan for review and approval **prior** to the removal and disposal of sludge.

DRAINAGE ISSUES

Brule County has the authority to regulate drainage. The town of Pukwana is responsible for getting any necessary drainage permits from the county **prior** to discharging.

ENDANGERED SPECIES

The table below is from the South Dakota Fish and Wildlife Service's *Endangered Species by County List* and shows the endangered and threatened species in Brule County as of September 18, 2008. This is a renewal of an existing permit. No listed endangered species are expected to be impacted by activities related to this permit.

T-Threatened E-Endangered

GROUP	SPECIES	CERTAINTY OF OCCURRENCE	STATUS
Bird	Crane, Whooping	Known	E
	Plover, Piping	Possible	T
Fish	Sturgeon Pallid	Known	E

PERMIT EXPIRATION

A five-year permit is recommended.

PERMIT CONTACT

Any questions pertaining to this statement of basis can be directed to Jonathan Hill, Natural Resources Engineer, for the Surface Water Quality Program, at (605) 773-3351.

January 12, 2009

ATTACHMENT 1

Antidegradation Review

Permit Type: **Minor Municipal - Renewal** Applicant: **Town of Pukwana**

Date Received: **January 8, 2009** Permit #: **SD0022586**

County: **Brule** Legal Description: **NW ¼ of Sec 26, T 104N, R 70W**

Receiving Stream: **Unnamed wetland** Classification: **9**

If the discharge affects a downstream waterbody with a higher use classification, list its name and uses: **N/A**

APPLICABILITY

1. Is the permit or the stream segment exempt from the antidegradation review process under ARSD 74:51:01? Yes ☒ No ☐ If no, go to question #2. If yes, check those reasons why the review is not required:

☐ Existing facility covered under a surface water discharge permit is operating at or below design flows and pollutant loadings;

☐ *Existing effluent quality from a surface water discharge permitted facility is in compliance with all discharge permit limits;

☐ *Existing surface water discharge permittee was discharging to the current stream segment prior to March 27, 1973, and the quality and quantity of the discharge has not degraded the water quality of that segment as it existed on March 27, 1973;

☐ *The existing surface water discharge permittee, with DENR approval, has upgraded or built new wastewater treatment facilities between March 27, 1973, and July 1, 1988;

☒ The existing surface water discharge permittee discharges to a receiving water assigned only the beneficial uses of (9) and (10); the discharge is not expected to contain toxic pollutants in concentrations that may cause an impact to the receiving stream; and DENR has documented that the stream cannot attain a higher use classification. This exemption does not apply to discharges that may cause impacts to downstream segments that are of higher quality;

☐ Receiving water meets Tier 1 waters criteria. Any permitted discharge must meet water quality standards;

☐ The permitted discharge will be authorized by a Section 404 Corps of Engineers Permit, will undergo a similar review process in the issuance of that permit, and will be issued a 401 certification by the department, indicating compliance with the state's antidegradation provisions; or

☒ Other: This permit does not authorize an increase in effluent limits.

*An antidegradation review is not required where the proposal is to maintain or improve the existing effluent levels and conditions. Proposals for increased effluent levels, in these categories of activities are subject to review.

No further review required.

ANTIDEGRADATION REVIEW SUMMARY

2. The outcome of the review is:

☒ A formal antidegradation review was not required for reasons stated in this worksheet. Any permitted discharge must ensure water quality standards will not be violated.

☐ The review has determined that degradation of water quality should not be allowed. Any permitted discharge would have to meet effluent limits or conditions that would not result in any degradation estimated through appropriate modeling techniques based on ambient water quality in the receiving stream, or pursue an alternative to discharging to the waterbody.

☐ The review has determined that the discharge will cause an insignificant change in water quality in the receiving stream. The appropriate agency may proceed with permit issuance with the appropriate conditions to ensure water quality standards are met.

☐ The review has determined, with public input, that the permitted discharge is allowed to discharge effluent at concentrations determined through a total maximum daily load (TMDL). The TMDL will determine the appropriate effluent limits based on the upstream ambient water quality and the water quality standard(s) of the receiving stream.

☐ The review has determined that the discharge is allowed. However, the full assimilative capacity of the receiving stream cannot be used in developing the permit effluent limits or conditions. In this case, a TMDL must be completed based on the upstream ambient water quality and the assimilative capacity allowed by the antidegradation review.

☐ Other: _____

3. Describe any other requirements to implement antidegradation or any special conditions That are required as a result of this antidegradation review: _____

Jonathan Hill	January 12, 2009
Reviewer	Date
Kelli D. Buscher, P.E.	January 13, 2009
Team Leader	Date

ATTACHMENT 2

Monitoring data

	BOD_5		Duration of discharge	Flow rate		Flow, total	pH		TSS		Temperature	
	30DA AVG	MX 7D AV	MO TOTAL	30DA AVG	DAILY MX	MO TOTAL	DAILY MN	DAILY MX	30DA AVG	MX 7D AV	30DA AVG	DAILY MX
Limit	30 mg/L	45 mg/L	N/A d/mo	N/A Mgal/d	N/A Mgal/d	N/A Mgal/mo	6 SU	9 SU	110 mg/L	165 mg/L	N/A deg C	N/A deg C
DMR												
5/31/2003	11	11	3	218.72	656.18		8.2	8.9	22	22	55	56
4/30/2004	14	14	2	0.71	0.71	1.43	8.27	8.45	39	39	15.6	17.3
6/30/2004	22	22	3	0.26	0.26	0.77	8.27	***9.15***	96	96	24.5	32
11/30/2004	29.3	29.3	7	0.14	0.14	1.63	8.2	8.8	84	84	6.4	6.4

Bold, Italicized, large font numbers indicate violations.